

REMARKS

The Office Action dated May 22, 2008, has been received and carefully considered. In this response, claims 6-12, 14, 17, 23, and 25 have been amended. No new matter has been added. Entry of the amendments to claims 6-12, 14, 17, 23, and 25 is respectfully requested. Reconsideration of the current objections/rejections in the present application is also respectfully requested based on the following remarks.¹

I. THE ENABLEMENT REJECTION OF CLAIMS

On page 2 of the Office Action, claims 1-29 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. This rejection is hereby respectfully traversed.

As stated in MPEP § 2163.02, the fundamental factual inquiry is whether a claim defines an invention that is clearly conveyed to those skilled in the art at the time the application

¹ As Applicants' remarks with respect to the Examiner's rejections are sufficient to overcome these rejections, Applicants' silence as to assertions made by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., assertions regarding dependent claims, whether a reference constitutes prior art, whether references are legally combinable for obviousness purposes) is not a concession by Applicants that such assertions are accurate or such requirements have been met, and Applicants reserve the right to analyze and dispute such in the future.

was filed. The subject matter of the claim need not be described literally (i.e., using the same terms or in *haec verba*) in order for the disclosure to satisfy the description requirement.

The Examiner asserts at page 2 of the Office Action that "[p]er claims 1, 14, 21 and 23, the claims recite 'continuously indexing by timestamp old data. . . prior to execution of each write command.' . . . Nowhere in the Applicant's disclose [sic] is it shown that the time-stamping of old data is performed before the execution of a write command." Applicants respectfully disagree. Applicants respectfully submit paragraph [0073], which states, in pertinent part, "[u]pon receipt of the host's 34 write request, the copy-on-write operation is executed by copying the existing data that is to be replaced from the current store A 44 to the time store A 46." (emphasis added). This paragraph may be read in combination with paragraph [0075], which explicitly states, in pertinent part, "[i]n various embodiments, the timestamp includes the time at which the data was written to the current store A 44 or the time store A 46." (emphasis added). Also of note is paragraph [0033], stating, in pertinent part, "this can be accomplished by the storage management device continuously saving information stored in a

data store before it is overwritten, for example, by the copy-on-write operation described." (emphasis added).

The Examiner asserts on page 3 of the Office Action that "the claims recite . . . 'recording, automatically, all write commands directed to the storage system.' This limitation can be interpreted to construe that the Applicant's invention is capable of storing/recording the actual write commands in the claimed storage system as opposed to merely receiving/intercepting the write commands as previously claimed." Applicants respectfully disagree with the Examiner's contention that the amendments are not supported. However, in order to move the present application forward to allowance, Applicants have amended claims 14 and 23 to reflect the "information associated with all write commands" language of claim 1. The Examiner has previously considered this language, and thus no further searching should be required for these amendments. Applicants also direct Examiner to paragraphs [0074] and [0075], which are reproduced below with emphasis added, as additional support for the amendments to claims 14 and 23.

[0074] It may be that an actual copy of data is not performed upon the occurrence of a write operation in a particular instance, for example, because the data that will be overwritten is already saved (because it was

saved with other nearby blocks, for example) or because the data is saved in memory and not written immediately. Here, copy-on-write operation can mean actual copying, but also can include such optimizations that allow for the effect of a copy-on-write. The storage management device 38 keeps track of the data that was in a unit of storage before it is overwritten, and there is sufficient information in a time store to obtain the saved data from somewhere within the storage management device 38, the physical store, and/or elsewhere after the block is overwritten. For simplicity of explanation, the examples described below generally present the operation of the storage management device 38 as if the copy-on-right were always performed, with the understanding that optimizations can be used in practice.

[0075] In one embodiment, the storage management device 38 indexes each copy-on-write and retains a record of the original location, the destination location, and a timestamp. In various embodiments, the timestamp includes the time at which the data was written to the current store A 44 or the time store A 46. In another embodiment, the timestamp includes the time that the write request was received and processed by the storage management device 38.

As stated in MPEP § 2163.07(a), by disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory, or has an advantage, a patent application necessarily discloses that function, theory or advantage, even though it says nothing explicit concerning it. The patent application may later be amended to recite the

function, theory, or advantage without introducing prohibited new matter. In re Reynolds, 443 F.2d 384 (CCPA 1971), In re Smythe, 480 F. 2d 1376 (CCPA 1973).

In view of the foregoing, it is respectfully requested that the aforementioned enablement rejection of claims 1-29 be withdrawn.

II. THE INDEFINITENESS REJECTION OF CLAIMS 6-12, 14-20, 25 AND 28

On page 3 of the Office Action, claims 6-12, 14-20, 25 and 28 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the invention. This rejection is hereby respectfully traversed.

As stated in MPEP § 2173.04, breadth of a claim is not to be equated with indefiniteness. In re Miller, 441 F.2d 689 (CCPA 1971). If the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. 112, second paragraph.

Applicants respectfully submit amendments to claims 6-12, 14, 17, and 25 to address each of the issues Examiner raised on page 4 of the Office Action. Applicants respectfully submit

that the indefiniteness rejection of claims 6-12, 14-20, 25, and 28 is rendered moot by the amendments.

In view of the foregoing, it is respectfully requested that the aforementioned indefiniteness rejection of claims 6-12, 14-20, 25 and 28 be withdrawn.

III. THE ANTICIPATION REJECTION OF CLAIMS 1-10, 13-19, AND 21-29

On page 5 of the Office Action, claims 1-10, 13-19, and 21-29 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,981,114 ("Wu"). This rejection is hereby respectfully traversed.

Under 35 U.S.C. § 102, the Patent Office bears the burden of presenting at least a prima facie case of anticipation. In re King, 801 F.2d 1324, 1326 (Fed. Cir. 1986). Anticipation requires that a prior art reference disclose, either expressly or under the principles of inherency, each and every element of the claimed invention. Celeritas Tech., Ltd., v. Rockwell Int'l Corp., 150 F.3d 1354, 1361 (Fed. Cir. 1998). "In addition, the prior art reference must be enabling." Akzo N.V. v. U.S. International Trade Commission, 808 F.2d 1471, 1479 (Fed. Cir. 1986), cert. denied, 482 U.S. 909 (1987). That is, the prior art reference must sufficiently describe the claimed invention so as to have placed the public in possession of it. In re

Donohue, 766 F.2d 531, 533 (Fed. Cir. 1985). Such possession is effected only if one of ordinary skill in the art could have combined the disclosure in the prior art reference with his/her own knowledge to make the claimed invention. Id.

Regarding claim 1, the Examiner asserts that Wu discloses the claimed invention. Applicants respectfully disagree. Applicants respectfully submit that Wu fails to disclose, or even suggest, at least a method having a "current store representing a current state of the storage system. . .," as presently claimed.

In contrast, Wu discloses a system whereby snapshots are created to back up and restore a computer system. Modification logs may be maintained in order to reconstruct a snapshot from an existing snapshot and one or more modification logs. See Wu, Title; col. 2, ll. 16-18. Snapshots of a target system are created. Modification logs are maintained to capture the changes between one snapshot and the next snapshot. Wu, col. 6, ll. 14-23. If the number of snapshots is greater than a limit, for example, the allowable disk space, one or more snapshots is deleted. Wu, col. 5, l. 59 - col. 6, l. 9. Modification logs are used in order to recreate snapshots that have been deleted, either through "forward" modification logs, to recreate a snapshot from an earlier snapshot, or through "backward"

modification logs, to recreate a snapshot from a later snapshot. Wu, col. 8, ll. 51-66. If modifications are identified in the modification logs by creation time, then point-in-time snapshots may be constructed. Wu, col. 9, ll. 45-61. Thus, Wu discloses recreating snapshots from existing snapshots. That is, Wu discloses using an existing snapshot, and then applying one or more modification logs in order to recreate a different snapshot, either through the application of a "forward" modification log or a "backward" modification log. Wu does not disclose maintaining a current store, which may be used to restore a storage system to any previous point in time. Accordingly, it is respectfully submitted that claim 1 is allowable over Wu.

As stated in MPEP § 2131, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631 (Fed. Cir. 1987).

Regarding claims 2-10, 13, 26, and 27, these claims are dependent upon independent claim 1. Thus, since independent claim 1 should be allowable as discussed above, claims 1-10, 13, 26, and 27 should also be allowable at least by virtue of their dependency on independent claim 1.

Regarding claim 14, the Examiner asserts that Wu discloses the claimed invention. Applicants respectfully disagree. First, this claim recites subject matter related to claim 1. Thus, the arguments set forth above with respect to claim 1 are equally applicable to claim 14. Accordingly, it is respectfully submitted that claim 14 is allowable over Wu for the same reasons as set forth above with respect to claim 1. Additionally, Applicants respectfully submit that Wu fails to disclose, or even suggest, at least that "the time store is identified as a location of the old data if the old data was overwritten after the specified time, and the current store is identified as a location of the old data if the old data was not overwritten after the specified time," as presently claimed.

In contrast, Wu, as described in greater detail above, discloses a system whereby snapshots are created to back up and restore a computer system. Modification logs may be maintained in order to reconstruct a snapshot from an existing snapshot and one or more modification logs. See Wu, Title; col. 2, ll. 16-18. Wu does not disclose maintaining a current store, which may be used to restore a storage system to any previous point in time. Accordingly, it is respectfully submitted that claim 14 is allowable over Wu.

Regarding claims 15-19 and 28, these claims are dependent upon independent claim 14. Thus, since independent claim 14 should be allowable as discussed above, claims 15-19 and 28 should also be allowable at least by virtue of their dependency on independent claim 14.

Regarding claim 21, this claim recites subject matter related to claim 1. Thus, the arguments set forth above with respect to claim 1 are equally applicable to claim 21. Accordingly, it is respectfully submitted that claim 21 is allowable over Wu for the same reasons as set forth above with respect to claim 1.

Regarding claim 22, this claim is dependent upon independent claim 21. Thus, since independent claim 21 should be allowable as discussed above, claim 22 should also be allowable at least by virtue of their dependency on independent claim 21.

Regarding claim 23, the Examiner asserts that Wu discloses the claimed invention. Applicants respectfully disagree. First, this claim recites subject matter related to claim 14. Thus, the arguments set forth above with respect to claim 14 are equally applicable to claim 23. Accordingly, it is respectfully submitted that claim 23 is allowable over Wu for the same reasons as set forth above with respect to claim 14.

Additionally, Applicants respectfully submit that Wu fails to disclose, or even suggest, at least "continuously indexing by timestamp old data to be overwritten with new data prior to execution of each write command," as presently claimed.

In contrast, Wu, as described in greater detail above, discloses a system whereby snapshots are created to back up and restore a computer system. Modification logs may be maintained in order to reconstruct a snapshot from an existing snapshot and one or more modification logs. See Wu, Title; col. 2, ll. 16-23. Wu discloses using modification logs to create deleted snapshots, but does not disclose "continuously indexing by timestamp old data to be overwritten with new data prior to execution of each write command" as recited in claim 23. Moreover, Wu discloses "detect[ing]" modifications via a modification manager. See Wu, col. 6, ll. 14-25. Wu does not disclose indexing by timestamp old data prior to execution of each write command. Accordingly, it is respectfully submitted that claim 23 is allowable over Wu.

Regarding claims 24, 25, and 29, these claims are dependent upon independent claim 23. Thus, since independent claim 23 should be allowable as discussed above, claims 24, 25, and 29 should also be allowable at least by virtue of their dependency on independent claim 23.

Regarding claims 1, 14, and 21, these claims recite subject matter related to claim 23. Thus, the arguments set forth above with respect to claim 23 are equally applicable to claims 1, 14, and 21. Accordingly, it is respectfully submitted that claims 1, 14, and 21 are allowable over Wu for the same additional reasons as set forth above with respect to claim 23.

In view of the foregoing, it is respectfully requested that the aforementioned anticipation rejection of claims 1-10, 13-19, and 21-29 be withdrawn.

IV. THE OBVIOUSNESS REJECTION OF CLAIMS 11, 12, AND 20

On page 11 of the Office Action, claims 11, 12, and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu in further view of "UNIX in a Nutshell" ("Gilly"). This rejection is hereby respectfully traversed.

Under 35 U.S.C. § 103, the Patent Office bears the burden of establishing a prima facie case of obviousness. In re Fine, 837 F.2d 1071, 1074 (Fed. Cir. 1988). There are four separate factual inquiries to consider in making an obviousness determination: (1) the scope and content of the prior art; (2) the level of ordinary skill in the field of the invention; (3) the differences between the claimed invention and the prior art; and (4) the existence of any objective evidence, or "secondary

considerations," of non-obviousness. Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966); see also KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727 (2007). An "expansive and flexible approach" should be applied when determining obviousness based on a combination of prior art references. KSR, 127 S. Ct. at 1739. However, a claimed invention combining multiple known elements is not rendered obvious simply because each element was known independently in the prior art. Id. at 1741. Rather, there must still be some "reason that would have prompted" a person of ordinary skill in the art to combine the elements in the specific way that he or she did. Id.; In re Icon Health & Fitness, Inc., 496 F.3d 1374, 1380 (Fed. Cir. 2007). Also, modification of a prior art reference may be obvious only if there exists a reason that would have prompted a person of ordinary skill to make the change. KSR, 127 S. Ct. at 1740-41.

It is respectfully submitted that the aforementioned obviousness rejection of claims 11, 12, and 20 has become moot in view of the deficiencies of the primary reference (i.e., Wu) as discussed above with respect to independent claims 1, 14, 21, and 23. That is, claims 11 and 12 are dependent upon independent claim 1 and thus inherently incorporate all of the limitations of independent claim 1. Similarly, claim 20 is dependent upon independent claim 14 and thus inherently

incorporate all of the limitations of independent claim 14. Also, the secondary reference (i.e., Gilly) fails to disclose, or even suggest, the deficiencies of the primary reference as discussed above with respect to independent claims 1 and 14. Indeed, the Examiner does not even assert such. Thus, the combination of the secondary reference with the primary reference also fails to disclose, or even suggest, the deficiencies of the primary reference as discussed above with respect to independent claims 1 and 14. Accordingly, claims 11, 12, and 20 should be allowable over the combination of the secondary reference with the primary reference at least by virtue of their dependency on independent claims 1 and 14. Moreover, claims 11, 12, and 20 recite additional features which are not disclosed, or even suggested, by the cited references taken either alone or in combination.

In view of the foregoing, it is respectfully requested that the aforementioned obviousness rejection of claims 11, 12, and 20 be withdrawn.

V. CONCLUSION

In view of the foregoing, it is respectfully submitted that the present application is in condition for allowance, and an early indication of the same is courteously solicited. The

Examiner is respectfully requested to contact the undersigned by telephone at the below listed telephone number, in order to expedite resolution of any issues and to expedite passage of the present application to issue, if any comments, questions, or suggestions arise in connection with the present application.

To the extent necessary, a petition for an extension of time under 37 CFR § 1.136 is hereby made.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-0206, and please credit any excess fees to the same deposit account.

Respectfully submitted,

Hunton & Williams LLP

By: 

Thomas E. Anderson

Registration No. 37,063

TEA:JBB/tmf

Hunton & Williams LLP
1900 K Street, N.W.
Washington, D.C. 20006-1109
Telephone: (202) 955-1500
Facsimile: (202) 778-2201

Date: 7/22/08